

REMARKS

Claims 1-8 are pending in the present application. No new matter has been added by way of the amendments made herein. Claim 9 has been cancelled.

Objections to the specification

The title has been objected to as not being descriptive. The title has been amended as suggested by the Examiner. Withdrawal of the objection is therefore respectfully requested.

Rejections under 35 U.S.C. §101

Claims 8 and 9 have been rejected under 35 U.S.C. §101 as being drawn to non-statutory uses. Claim 8 has been amended to be more properly directed to a method and claim 9 has been cancelled. Withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. 103(a)

Claims 1-9 are rejected under 35 U.S.C. §103(a) as being obvious over Fagrell (WO 00/36880) or DiMartino et al. (US 5,393,492), in view of Adams et al. (US 6,060,288) or Janner et al. (US 4,289,592). Applicants traverse this rejection and withdrawal thereof is respectfully requested.

Both Fagrell and DiMartino are relied on for teaching microwave catalyzed reactions. However, both references use heat exchangers to cool the reactions. Adams and Janner are both relied on for teaching the use of adiabatic cooling during the course of chemical reactions (neither reference mentions microwave catalyzed reactions). The Examiner asserts that it would have been obvious to simply replace conventional cooling with adiabatic cooling in microwave catalyzed reactions because of the desire for better cooling.

As noted, the Examiner relies upon Adams and Janner to teach the use of adiabatic cooling during chemical reactions. However, with regard to Adams, the reference to adiabatic cooling is limited to the following text: "Cooling may be effected by applying cooled material, by applying electrical peltier cooling, by permitting the adiabatic expansion or evaporation of a liquid." However, this disclosure in Adams does not refer specifically to the liquid in which the

reaction is taking place, or the liquid containing the reaction components involved in the reaction based on the solid-phase support. It merely refers to 'expansion or evaporation of a liquid'. Adams pertains to methods and kits for performing PCR reactions. PCR is an extremely sensitive technique that demands the stringent containment of reaction components in a simple chamber to avoid contamination. Heating and cooling methods with PCR reactions are applied externally, as indicated by the other methods of joule heating, Peltier cooling etc. Thus, one skilled in the art would readily conclude that the reference to adiabatic expansion or cooling in Adams involves a liquid that is external to the reaction chamber containing the test sample, i.e. it is not the reaction liquid itself that is subject to the adiabatic expansion or cooling. As such, the disclosure in Adams of adiabatic cooling is not relevant to the instant invention, nor does it suggest the step recited in claim 1 of adiabatically cooling the reaction mixture. Thus, even when the teachings of Fagrell or DiMartino are combined with Adams, the instant invention is not achieved because there is no teaching in any of the references of adiabatically cooling a reaction mixture.

With regard to Janner, this reference discloses a method of selectively separating an isotope substance from a vaporous mixture of isotope substances, where the reaction partner and the isotope mixture are separately expanded adiabatically in nozzles **prior to the reaction** and then mixed together in a space where they are further cooled down and **after the cooling are they reacted by electromagnetic radiation** (see e.g., column 3, lines 15-43 and fig. 1). In other words, Janner neither teaches nor suggests how to instantaneously cool down a reaction mixture after completion of the reaction. There is no suggestion in either Fagrell or DiMartino or Janner of the results obtained by the method and apparatus disclosed in the present application, i.e. using adiabatic cooling in order to achieve a pure product with high yield. On the contrary, Janner is concerned with selectively separating the different isotopes included in a vaporous isotope mixture in order that the components do not react with each other before the conditions are right for starting the reaction through electromagnetic irradiation. Thus, there is no disclosure in Janner of using adiabatic cooling to cool a reaction (in Janner the adiabatic cooling

occurs prior to the reaction). The instant invention cannot be achieved, therefore, by combining the teachings of Fagrell or DiMartino with Janner.

Accordingly, in view of the above, a skilled person faced with the problem underlying the present invention would not be able to find any guidance or incentive in either Adams or Janner in order to combine any of these documents with Fagrell or DiMartino and arrive at the present invention. As such, the instant invention is not obvious over the combined reference teachings and withdrawal of the rejections is respectfully requested.


In view of the above remarks, it is believed that claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact MaryAnne Armstrong, Ph.D., Reg. No. 40,069 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By 
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